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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/693,621	10/20/2000	Eitan T. Wiener	END0691/2640/0H058	8869
27777	7590	08/22/2007		
PHILIP S. JOHNSON JOHNSON & JOHNSON ONE JOHNSON & JOHNSON PLAZA NEW BRUNSWICK, NJ 08933-7003			EXAMINER ALI, SHUMAYA B	
			ART UNIT 3771	PAPER NUMBER
			MAIL DATE 08/22/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/693,621

Applicant(s)

WIENER ET AL.

Examiner

Shumaya B. Ali

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3771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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Status of Claims

In response to the final office action mailed on 1/19/07, Applicant has amended claim 1.

Currently, claims 1-14 are pending in the application.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/12/07 has been entered.

Claim Objections

Claim 11 is objected to because of the following informalities: in line 3, the recitation of "the average current" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,5-8, and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellogg et al. US 5,897,569 in view of Hatta et al. US 5,931,836.

As to claim 1, Kellogg discloses an ultrasonic surgical system including a controllable ultrasonic energy generator, a hand piece with a blade that is vibrated at an ultrasonic resonance frequency rate by energy from the generator, and a switch for indicating to the generator the amplitude and frequency of the energy supplied to the hand piece, said ultrasonic generator comprising: an analog input drive signal generator (**fig. 1, 30**), which generates an input drive signal having an amplitude and frequency (**col. 3, lines 9-18**); an amplifier (**fig. 2, 30-5**) which receives the analog input drive signal and supplies the energy through a transformer and the

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transformer output is fed to the hand piece (see fig.2) through a line in response thereto (col. 8, lines 29-31); a current sensor (fig.2, 30-15) that senses the current in the line and produces a current signal related thereto (col. 8, lines 47-51); a comparator (150) which compares the current signal to a variable preset current value and produces a difference signal that is applied to the analog input drive signal generator so as to change the amplitude of the drive signal to cause the current signal to match the preset value (col. 9, lines 28-32); a voltage sensor (fig. 2, E1), which senses the voltage on the line and produces a voltage signal related thereto (col. 8, lines 54-55); a digital phase detector (fig. 2, 30-6), which compares the current signal to the voltage signal and generates a digital phase code related to the phase difference between them (col. 8, lines 29-31); a digital impedance detector (col. 10, lines 54-59), which compares the ratio of the voltage signal to the current signal and generates a digital impedance code related thereto; a digital controller (fig.3, 166) which receives the digital phase code and the digital impedance code and produces a digital frequency code in response thereto which is at a frequency which represents the resonance of the hand piece; and a direct digital synthesis circuit (fig.3, 134) for converting the digital frequency code to an analog frequency signal that is applied to the analog input drive signal generator so as to maintain the frequency at the resonance frequency (col. 9, lines 8-10). Kellogg however lacks the location of current and voltage sensor being at the transformer output. However, Hatta in an electro-surgery apparatus (i.e. electric scalpel, see col.1, lines 9-11) teaches both voltage (see fig.2A, 14) and current (see fig. 2A, 13) sensors located at a transformer (see fig.2A, 12) output. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the location of voltage and

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current sensors of Kellogg because it is known in the art to place the current and voltage sensors at transformer output as taught by Hatta.

As to claim 5, Kellogg does not explicitly disclose the ultrasonic surgical system of claim 1 wherein the digital phase detector comprise a voltage signal zero crossing detector which produces a voltage zero signal when said voltage signal crosses a zero axis; a current signal zero crossing detector which produces a current zero signal when said current signal crosses a zero axis; a circuit for measuring the time between the voltage zero signal and the current zero signal and producing a digital code related thereto, however, Kellogg discloses a digital phase detector, which operates in accordance with the voltage and current output (**see col.8, lines 30-68 and col.9, lines 1-5**), thus, a phase detector that responses to a given voltage and current output can inherently capable of detecting signal at a given voltage and current axis.

As to claim 6, Kellogg lacks explicit teachings of the ultrasonic surgical system of claim 1 wherein the digital impedance detector comprises a voltage averaging circuit which produces a voltage average signal based on the said voltage signal; a current averaging circuit (**fig.3, E2-E3**) which produces a current averaging signal based on said current signal, and wherein said digital controller continuously generates the ratio of the voltage average signal to the current average signal as a impedance signal, and wherein a change in said impedance signal as the drive signal frequency changes indicates an approach to said resonance frequency. However, Kellogg discloses a programmable system (**col.1, lines 38-68 and col.2, lines 1-48**) that responses to current, voltage, and impedance signals. Therefore, one of ordinary skill of art would be fully capable of providing the claimed function by manipulating programmable controls of Kellogg.

As to **claim 7**, Kellogg discloses the ultrasonic surgical system of claim 1 further including a power level switch (**fig.1, 34**) circuit, which determines the preset current level.

As to **claim 8**, Kellogg discloses the ultrasonic surgical system of claim 7 wherein the power level switch circuit comprise a power level switch connected to said digital controller (see **fig. 4B, 149**) and causing said digital controller to produce a digital current level signal, a digital-to-analog converter for changing the digital current level signal into an analog current level signal (**col.2, lines 31-48**), a current averaging circuit which produces a current average signal based on the said current signal from said current sensor (see **fig.3, E1-E3**); a current comparator (**fig.3, 150**) which compares the analog current level signal and the average current signal and produces an amplitude control signal, said amplitude control signal (**fig.2, 30-2**) which is applied to the direct digital synthesis circuit to vary the amplitude of the analog frequency signal.

As to **claim 10**, Kellogg discloses the ultrasonic surgical system of claim 1, wherein during start up of the system causes the amplifier to generate an ultrasonic signal at a frequency near resonance (**col.1, lines 59-63**), and to increment the frequency toward resonance while monitoring the outputs of said digital phase detector and digital impedance detector, and to halt the incrementing when these outputs indicate resonance of the hand piece (**col.2, lines 3-48**).

As to **claim 11**, Kellogg discloses the ultrasonic surgical system of claim 1 further including a memory (Kellogg discloses a system that “automatically isolates itself” (see **col.2, lines 17-19**), such action inherently requires a system to have a memory storage capability) which stores the maximum current to be delivered to a hand piece, and wherein the digital controller compares the average current signal to the maximum and halts the supply of energy to the hand piece when the average current exceeds the maximum (**col.2, lines 3-48**).

As to **claim 12**, Kellogg discloses the ultrasonic surgical system of claim 1 where in the digital controller includes a program which causes the amplifier to supply different current and voltage levels to the hand piece at different frequencies and to measure the current, voltage and phase to diagnose and test the operation of the system (see **col.2, lines 31-48**).

As to **claim 13**, Kellogg discloses the ultrasonic surgical system of claim 12 further including a console (**fig.1, 30**) for housing the generator, said console having a front panel (**fig.1, a front panel comprising rectangular and triangular figures**), and wherein the diagnoses and testing is implemented in response to the activation of a button (**fig.1, 34**) on the front panel and one of a foot pedal switch (**fig.2, 36**) and a hand piece switch (**fig.2, 36**).

Claims 2-4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellogg et al. US 5,897,569 in view of Hatta et al. US 5,931,836 and in view of Honda US 6,066,135.

As to **claim 2**, Kellogg discloses the claimed invention as applied for claim 1 with the exception of a controlled power supply for an amplifier. However, Honda, which also relates to an ultrasonic operating apparatus, teaches that it is known to provide a controlled power supply for amplifier (see **fig.3, 12 and 13**). Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the amplifier of Kellogg with the power controlled amplifier of Honda for the purpose of ensuring a stabilized performance and improving the safety of the ultrasonic operating apparatus as taught by Honda (**col. 2, lines 44-50**).

As to **claim 3**, Kellogg lacks explicit teachings of the ultrasonic surgical system of claim 2, wherein the controlled power supply comprises: a fixed reference voltage, a comparator which compares the output of the amplifier to the fixed reference voltage and generates a power control

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signal in response thereto; an adjustable buck regulator receiving a supply of power at one level and producing a supply at a different level based on the power control signal, the power at the different level being supplied to the amplifier. However, Kellogg as modified by Honda teaches a controlled power supply and microprocessor. Thus, it would have been obvious to one of ordinary skill in the art to program microprocessor and programmable frequency generator (**col.2, lines 34-36**) of Kellogg to derive at the claimed fixed reference voltage and comparator and adjustable regular are inherent component of a controlled power supply.

As to **claim 4**, Kellogg discloses the ultrasonic surgical system of claim 3, wherein the output of the amplifier is connected to said comparator by a loop filter (**col.11, lines 25-35**).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellogg et al. US 5,897,569 in view of Hatta et al. US 5,931,836 and in view of Burnside et al. US 6,511,478 B1.

As to **claim 14**, Kellogg lacks the ultrasonic surgical system of claim 1 further including an electrical interference detector which produces an output in response to the operation of an Electro-surgical Unit in the vicinity, and wherein the digital controller halts operation of the system in response to an output from said interference detector. However, Burnside in a surgical instrument (**i.e. surgical probe, see col.1, lines 9-11**) teaches interference sensor that can reject interference from the ablation power generator, for example, digital signal processing may be utilized to reject the noise emanating from the ablation power generator (**see col.14, lines 32-38**). Burnside further teaches such interference would enable his system to operate with greater efficiency since an increased level of ambient noise would be prevented

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from interfering with the operation of the sensors. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kellogg to incorporate interference sensor for the purposes of increasing the efficiency of the surgical system by preventing ambient noise from interfering with the operation of the sensors as taught by Burnside. Since Kelloggs teaches a digital controller that responses to various sensors, i.e. current and voltage sensors, (see col.1, lines 38-38 and col.2, lines 1-48), the digital system would inherently be capable of responding to the interference sensor, thus would halt operation of the system in response to an output from said interference detector.

Conclusion

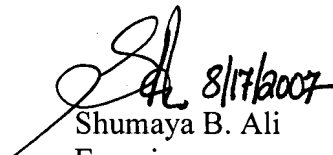
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shumaya B. Ali whose telephone number is 571-272-6088. The examiner can normally be reached on M-W-F 8:30am-5:00 pm.

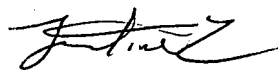
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

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like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Shumaya B. Ali
Examiner
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JUSTINE R. YU
SUPERVISORY PATENT EXAMINER
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8/17/07